Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In The Matter Of	)	
Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services	)	WT Docket No. 03-264

To: The Commission

REPLY COMMENTS OF QUALCOMM INCORPORATED

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QUALCOMM Incorporated ("QUALCOMM"), by its attorneys, hereby submits its Reply Comments in the above-captioned proceeding on possible changes by the Commission to the PCS base station power limit, 47 C.F.R. § 24.232(a).

I. Summary

The issue before the Commission in this proceeding is whether all PCS networks, no matter the air interface they employ, should have a common limit on the amount of power per MHz they can radiate from base stations, as QUALCOMM has proposed in its Comments. No commenter has justified, or could justify, any other result in view of the Commission's longstanding, successful policy of maintaining technology neutral rules for the wireless industry. As both Lucent (at page 2) and Motorola (at pages 2-3) state in their comments, a per carrier limit would discriminate against CDMA and WCDMA networks, which use wider channels than GSM and TDMA networks, and, thus, the Commission should not adopt a per carrier limit.

Moreover, no commenter has quarreled with the notion in QUALCOMM's comments that the current limit should be raised to take account of improvements in low noise ampliflier

technology, which has lead to substantial improvements in the noise figures of receivers, improvements which can improve the quality of service for the American public. The Commission adopted the current base station power limit in 1994, well before this technology was developed. This improved receiver technology can only be enjoyed by the public if the PCS forward link range is extended via a higher base station power limit.

For these reasons, QUALCOMM asks again that the Commission adopt a PCS base station power limit of 5040 Watts EIRP/MHz, measured in 1 MHz. This limit would treat all PCS networks, no matter what air interface they employ, in a technology-neutral manner, but would also allow all networks to increase their base station power from the current limits so that the American public can enjoy the benefits of the improvements in receivers. This aspect of QUALCOMM's proposal alleviates Motorola's concern that the Commission not adopt a rule that would effectively require GSM and TDMA networks to reduce their base station power from present levels. Motorola Comments at Pg. 3. QUALCOMM's proposed limit would also be relatively easy for the Commission to enforce, as QUALCOMM explained at pages 8-9 of its Comments.

Ericsson contends in a misleading fashion that a power density limit would force GSM and TDMA networks to transmit at significantly lower levels than wideband systems per carrier. Ericsson Comments at Pg. 9. Ericsson presents a comparison of power density in TDMA, GSM, CDMA, and WCDMA networks, but fails to take into account frequency reuse. Typically, a GSM network, for example, with a reuse of 3, would have no more than two carriers in 1 MHz, while a CDMA network needs 1.25 MHz for a single carrier. QUALCOMM's proposal allows each network to radiate up to the same amount of power per MHz.

In setting or changing the PCS base station power limit, the Commission's ultimate concern is preventing harmful interference. A per carrier limit would not regulate total power from a base station and, thus, would not address harmful interference. Rather, only a limit on total power per MHz, a spectral power density limit as QUALCOMM has proposed, would do so, and this is yet another reason why the Commission should adopt QUALCOMM's proposal.

Finally, such a limit as QUALCOMM has proposed would allow wireless networks to deploy multi-carrier power amplifiers ("MCPAs") and would remove the regulatory restriction against them that Powerwave finds in the present rules. Under QUALCOMM's proposal, a wireless network could employ MCPAs at will, so long as the network meets the 5040 Watts EIRP/MHz limit and, therefore, does not radiate an undue amount of power per MHz. QUALCOMM's proposal is fair, equitable, and in the public interest.

II. Powerwave Ignores the Adverse Impact of a Per Carrier Limit On CDMA and WCDMA and Simply Speculates About An EIRP/MHz Limit

The main proponent of changing the PCS base station power rule to a per carrier limit, Powerwave Technologies, Inc. ("Powerwave"), never deals in its Comments with the fact that such a limit would favor GSM and TDMA networks over CDMA and WCDMA networks, even though the Commission itself raised this issue in the Notice of Proposed Rule Making ("NPRM") in this proceeding. See NPRM at para. 18. Powerwave just pretends that this disparity does not exist. The Commission cannot follow suit, and the Commission rightly did not do so in the NPRM.

Instead of addressing the issue posed by the Commission in the NPRM, Powerwave's only comments about a spectral power density limit consist of speculation that a "sudden shift" to such a limit "could be seriously disruptive to PCS operators and equipment manufacturers." Powerwave Comments at Page 9. There is no basis for this speculation. It would certainly not

be disruptive for PCS operators or equipment manufacturers if the Commission adopted QUALCOMM's proposed limit, which would allow the PCS operators to raise their base station power from current levels. Powerwave goes on to speculate that a "hastily considered" spectral power density limit "might" necessitate additional and costly base station construction and "might" impact current operations and equipment designs." Powerwave Comments at Pages 9-10. Again, there is no basis for this speculation. Powerwave does not and cannot explain why it would cost more to design and build base stations to a higher limit, albeit to a limit based on EIRP/MHz. The Commission should disregard these unsupported claims.

III. QUALCOMM's Proposal Resolves Motorola's Concern That GSM and TDMA Networks Not Suffer a Reduction in Their Permitted Base Station Power

In its Comments, Motorola agreed with QUALCOMM that a per carrier limit "is biased against wider bandwidth technologies as it allows technologies that utilize a narrower bandwidth to radiate a higher power per unit bandwidth" and that this disparity "places wider bandwidth systems at a competitive disadvantage because wider bandwidth technologies will need to deploy additional infrastructure to maintain the same coverage area as narrower bandwidth technologies." Motorola Comments at Page 3. However, Motorola went on to ask that the current limit be applied on a per carrier basis for GSM and TDMA networks because if they were subject to a limit of 1640 Watts EIRP/MHz, measured in 1 MHz, that limit would be more severe than the present limit as interpreted on a per carrier basis and would negatively impact current GSM and TDMA networks. Id.

QUALCOMM's proposed limit would not be more severe than the present limit for any network, CDMA, WCDMA, GSM, or TDMA. It would not have a negative impact on current GSM and TDMA networks. By raising the limit for all networks, the Commission would not impose an adverse result on any current network. But, by raising the limit on the basis of

EIRP/MHz, as QUALCOMM has proposed, the Commission would avoid the adverse impact on CDMA and WCDMA networks that Motorola identifies in its Comments.

IV. Ericsson Cannot Explain Why the FCC Should Let GSM and TDMA Base Stations Operate at More Power Per MHz Than CDMA or WCDMA Base Stations

Ericsson, while asking the Commission to eliminate the PCS base station power limit altogether, argues that if the Commission retains the limit, it should apply the limit on a per carrier basis. Ericsson Comments at Pages 4-10. Ericsson argues that the Commission should not adopt a power spectral density limit because such a limit would discriminate against GSM and TDMA networks because these networks would have to operate at significantly lower levels per carrier than CDMA or WCDMA networks. Ericsson Comments at Pages 8- 9.

In the first place, as already noted, Ericsson's comparison of power per carrier is flawed because it ignores the impact of frequency reuse. But, more fundamentally, Ericsson's argument is flawed because Ericsson is effectively asking the Commission to compensate for the fact that the TDMA and GSM networks are based on the use of more carriers than CDMA and WCDMA networks. As already stated supra, the Commission's ultimate concern in regulating base station power is and should be preventing harmful interference. What is relevant from that standpoint is the overall power per MHz emitted from each base station, not power per carrier since one of the Commission's prime reasons for considering changing the limit is to accommodate MCPAs.

QUALCOMM respectfully submits that the Commission should regulate the power per MHz to prevent harmful interference and let the carriers and equipment manufacturers design and deploy solutions in compliance with the limit. Such a limit may have different implications for different networks, but it would not discriminate against any technology.

Finally, Ericsson makes much of the fact that in 1994, the Commission denied a petition for reconsideration of the PCS base station power rule by SCI/ArrayComm. Ericsson Comments

at Pages 5-6, 9. However, in so ruling, the Commission "stressed" that its ruling was without prejudice to a subsequent petition for rule making should any party wish to pursue the issue on a more fully developed record. Third Memorandum Opinion and Order, In the Matter of Amendment of the Commission's Rules to Establish New Personal Communications Services, GEN Docket No. 90-314, 9 FCC Rcd 6908, 6918 n. 114 (1994). Now, over ten years after the Commission adopted the original PCS technical rules, this matter is certainly ripe for Commission review, particularly in light of the improved noise figures of receivers.

V. Conclusion

Wherefore, for the foregoing reasons, QUALCOMM respectfully requests that the Commission revise Section 24.232 (a) to provide that PCS base stations may operate at a radiated power spectral density of no more than 5040 Watts EIRP/MHz , as measured in 1 MHz.

Respectfully submitted,

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